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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,623	01/18/2002	Hsien-Ying Chou	B-4456 619448-3	3120

7590 01/15/2004

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EXAMINER

LEFLORE, LAUREL E

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 01/15/2004

A

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/052,623

Applicant(s)

CHOU ET AL.

Examiner

Laurel E LeFlore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner:  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because in figure 4, step S2, "dirving" should be "driving". Also, "from" should be removed from step S1. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The disclosure is objected to because of the following informalities: On page 3, lines 23-24, "Compared to the efficiency of the two The" should be "Comparing the efficiency of the two". On line 26, "The" should be removed.  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 6 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 1 recites the limitations "the display and non-display zones" in lines 2-3, "the external power supply in lines 3-4, and "the lamp" on line 4. There is insufficient antecedent basis for these limitations in the claim.

Further in claim 1 (as well as in claims 6 and 11), the limitation of "after separating the display and non-display zones" is an implied limitation. Also, this and other steps of claims should be written in active rather than passive voice (e.g. "stopping the external power supply" rather than "the external power supply...is stopped").

6. Claim 6 recites the limitations "the display and non-display zones" in lines 2-3, "the external signal supply" on lines 3-4, and "the LCD display matrix circuit" on lines 4-5. There is insufficient antecedent basis for these limitations in the claim.
7. Claim 11 recites the limitations "the display and non-display zones" in lines 2-3, "the external power and signal supply" in lines 3-4, "the portion" in line 4, and "the lamp and LCD display matrix" in lines 4-5. There is insufficient antecedent basis for these limitations in the claim.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Rader 5,867,140.

In regard to claim 1, Rader discloses a power-saving Liquid Crystal Display (LCD) driving method that separates an LCD display panel into display and non-display zones. See column 2, lines 23-30, referring to figure 3,

disclosing, "The illustrated display panel 200 has a full display screen area 303...It also includes partial display field 305 which is within...the full display screen area 303." This partial display panel is active, with the rest of screen area 303 being inactive, during "partial image display mode" (see column 4, line 19). See column 3, lines 44-52, disclosing use of the LCD in a phone in which the CPU controls "the display panel 200 to display an image only in the partial display field 305 when the phone enters a 'sleep mode'".

During this partial image display mode, the external power supply to the portion of the lamp lighting the non-display zones is stopped and the LCD remains active. See column 5, lines 25, disclosing, "In the partial image display mode, the input switch 414 is held in position b, wherein the input contact 428 is connected to the output 430. This allows the contents of the FIFO memory 416 to circulate while the DMA channel 406, and optionally the display image buffer 304, are disabled (powered down). This provides significant power savings in the partial display mode." Also see lines 15-18 of column 5, disclosing, "If for any reason the DMA channel doesn't supply a pixel control signal in a timely manner," (such as when it is powered down during partial image display mode) the output of the FIFO memory 416 can be recirculated back to the input 431 by input switch 414." Note such a loop is depicted in figure 4. It can be seen from figure 4 that recirculation occurs in elements 414 and 416, which are before pixel scanning and row and column driving of the LCD panel. Thus, the pixels of the

LCD panel are not driven and the lamp lighting the region, along with the RAM and DMA, is inherently not powered.

10. In regard to claim 2, Rader discloses that there is at least one display zone. See rejection of claim 1 and element 305 of figure 3.

11. In regard to claim 3, Rader discloses that there is at least one non-display zone. See rejection of claim 1.

12. In regard to claim 4, Rader discloses that a regulator is used to adjust power externally supplied to the lamp lighting the non-display zone. See column 4, lines 6-7, referring to figure 3, disclosing, "The display system 300 is powered by battery 112. The battery voltage is regulated by voltage regulator 322." Thus a voltage regulator is used to adjust all voltage powering the entire system, which includes the lamp lighting the non-display zone.

13. In regard to claim 6, Rader discloses a power-saving Liquid Crystal Display driving method, characterized in that after separating the display and non-display zones on a LCD display panel, the external signal supply to the portion of the LCD display matrix circuit powering the non-display zones is stopped and the LCD is active. See rejection of claim 1. Further see column 8, lines 43-54, disclosing, "The display control circuit 301 thus includes a first display image buffer 304 having capacity sufficient to store pixel control signals for controlling the image on the entire display screen of the display panel 200. A second display image buffer, FIFO memory 416 or partial image memory 500, has the capacity to hold an image for the partial display field 305. The second display

image buffer is smaller than the first display image buffer. The state control and timing logic 422 controls the operation of the input switch 414 and output switch 420 such that the source of the image for the screen is switched from the first display image buffer to the second display image buffer in a synchronized manner.” Thus, when switched to the second display image buffer, there is no external signal supply to the non-display portion of the LCD.

14. In regard to claim 7, see rejection of claim 2.

15. In regard to claim 8, see rejection of claim 3.

16. In regard to claim 9, Rader discloses that a signal controller is used to adjust the signal externally supplied to the LCD display matrix circuit powering the non-display zone. See rejection of claim 6 disclosing the use of “state control and timing logic 422” for such a function. Also see column 7, lines 31-35, disclosing, “The output switch 420 is thus acts as a combiner to combine the pixel off signals with the partial image pixel control signal to control all of the display screen area of display panel 200.”

17. In regard to claim 10, Rader discloses that the output of the signal controller is a control signal for determining if the LCD display matrix circuit is active. See rejection of claim 9. Further see column 7, lines 51-53, disclosing, “A pixel off code is scanned over the unused portion of the display to assure that the unused portion remains blank.”

18. In regard to claim 11, see rejection of claims 1 and 6.

19. In regard to claim 12, see rejection of claim 2.

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20. In regard to claim 13, see rejection of claim 3.

21. In regard to claim 14, see rejections of claims 6 and 9.

22. In regard to claim 15, see rejection of claim 10.

23. In regard to claim 16, see rejection of claim 4.

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rader 5,867,140 in view of Mizuno 2002/0135575 A1

In regard to claim 5, Rader discloses an invention similar to that which is claimed in claim 5. See rejection of claim 4 for similarities (Rader discloses a voltage regulator). Also see column 7, lines 51-53, disclosing, "A pixel off code is scanned over the unused portion of the display to assure that the unused portion remains blank." Thus, Rader discloses a control signal for determining if the lamp is active. Rader does not disclose that the control signal is an output of the regulator.

Mizuno 2002/0135575 A1 discloses a driving method of a liquid crystal display in which (see figure 5) the voltage for driving the display is output from switching and voltage regulators along with a power control signal (see page 4, paragraph [0053]). Also see paragraph [0058], disclosing "the power control



signal based on a liquid crystal alternation signal relating to the display on the liquid crystal display apparatus, to thereby reduce the power consumption.”

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Rader by having the control signal be an output of the regulator, as in the invention of Mizuno. One would have been motivated to make such a change based on the teaching of Mizuno to have a “power control signal...relating to the display on the liquid crystal display apparatus, to thereby reduce the power consumption”.

### ***Conclusion***

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yamazaki 6,522,319 B1 discloses a liquid crystal display with display and non-display regions.

Burgan et al. 5,805,121 discloses a liquid crystal display in which select rows of pixels can be turned off, saving power.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurel E LeFlore whose telephone number is (703) 305-8627. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (703) 305-3885. The fax phone

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number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

LEL

JOSEPH MANCUSO  
PRIMARY EXAMINER